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ABSTRACT

An instrument for measuring telephone apprehension was developed to facilitate research into hypothesized relationships between communication apprehension and telephone apprehension. A set of 92 Likert-type items was adapted from previous communication apprehension scales and administered to 81 undergraduate students in a speech communication class. The items were evaluated for reliability and 62 were eliminated. The remaining 30 items were refined and administered to 371 speech communication students. Numerical values of responses to some items were reversed so that in every case larger numbers indicated higher apprehension, and a composite score was calculated for each of 333 individuals returning data. Correlations between the composite and individual scales were examined, and the items with the lowest correlations were systematically discarded until only 20 items remained. Composite scores ranged from 20 to 83 with a mean of 40.86. Forty-one students scored more than one standard deviation unit above the mean. Twenty-five scored above 60, the midpoint of potential scores. A factor analysis was performed to further verify the unidimensional nature of the scale. The results indicated that the 20 items constituted a reliable and unidimensional scale that could be used to assess telephone apprehension. (The 20-item scale is included.) (HTH)

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MEASURING TELEPHONE APPREHENSION

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MEASURING TELEPHONE APPREHENSION

ABSTRACT

This paper identifies a relatively new variable, telephone apprehension. The authors argue that telephone apprehension may have a significant impact on personal happiness and professional success, and call for the development of appropriate measurement devices.

In 1969 Pat and Lamar began graduate work at a university in central Michigan. They were often enrolled in the same courses and frequently needed to exchange information concerning assignments. Since Pat and her husband lived in one town while Lamar and his wife lived in another town, the most efficient method of communication--particularly communication at "odd" hours--was the telephone.

An intriguing pattern of telephone communication emerged: Pat and Lamar managed to exchange information but they almost never spoke to each other on the telephone. Pat would ask her husband to telephone Lamar, and Pat's husband (Ken) would end up talking to Lamar's wife (Janet). So if Pat had a question for Lamar she would ask Ken, who would (over the telephone) ask Janet, who would ask Lamar. Lamar's answer would be relayed by Janet to Ken and then to Pat.

This behavior pattern soon attracted the attention of the four people participating in it. They were first amused and then curious. Discussion revealed that in each household one person had taken (or been forced to accept) the role of answering and initiating almost all phone calls, that this role specification was conscious and intentional, and that in each case the role specification had developed due to one spouse being markedly uncomfortable about communicating over the telephone. The experience of these two couples illustrates a communication variable which we call telephone apprehension.

We define telephone apprehension as anxiety or fear

associated with the anticipated or actual use of the telephone as a communication channel. We view it as a factor which may influence some individuals to avoid telephone interactions, and which may hinder an individual's performance by hampering either encoding or decoding during a telephone conversation. We see it as differing from (but perhaps related to) either a lack of telephone skills or other forms of communication apprehension.

Communication scholars have already investigated apprehension in a variety of contexts, including speech apprehension, communication apprehension, writing apprehension, and listening apprehension: They have found that apprehension is related both to academic success and professional success. But, for the most part, communication scholars seem to have overlooked apprehension associated with human communication through electronic technology. Current evidence of telephone apprehension is primarily anecdotal and impressionistic, including the assertion by one communication consultant (Phone, 1982) that telephone selling is inappropriate for "phonophobics," people who fear the telephone. As we move into a time when human communication is increasingly conducted by means of the telephone or some other electronic technology, we cannot afford to rely upon anecdotal analysis of a phenomenon which may affect the personal happiness and occupational success of many persons.

Telephone apprehension--and apprehension associated with other forms of human communication technology--is worthy of

scholarly study. Empirical research in this area will depend, in part, on the development of useful operational definitions, i.e., appropriate measuring instruments. This paper reports an attempt to develop one such instrument, a self-report, paper-and-pencil test of telephone apprehension.

Relevant Literature

There is, apparently, a dearth of communication literature on telephone apprehension. But literature of two sorts does have some relevance to the current project. One body of literature documents the present and continuing importance of telephonic communication. A second body of literature focuses on the communication apprehension concept. Each of these two literatures will be discussed briefly.

Importance of the Telephone

By any measure the telephone is an important communication channel. In the U.S. there are more than 175 million phones (AT&T, 1980). Current patterns of friendship, courtship, and family communication, all depend, in part, on the availability of high quality, relatively inexpensive phone service. The average household initiates about four calls a day and between 40 and 50 percent of these calls go to other households within a two mile radius (Mayer, 1977).

The average businessman or woman is also a heavy user of telephone communication. About 46 million phones in the U.S.--26.4% of the U.S. total--are designated as business phones (AT&T, 1980). Conrath collected data on communication

episodes in a single Canadian manufacturing plant; 12.86 percent of the episodes were conducted by telephone rather than face-to-face or in writing (1973, p. 598). Thorngren's summary of contacts between organizations and between regions in Europe examined only telephone and face-to-face contacts, but the telephone contacts were approximately 80 percent of the total (1977, p. 380). Observations reported by Klemmer and Snyder indicate that workers in a research and development laboratory spent about seven percent of the work day talking on the telephone (1972, p. 149). Volard and Davies reported that Australian managers spent about six percent of their time on the telephone (1982, pp. 45-46). And Plotzke claims that U.S. executives spend about 16 percent of their working day talking on the phone (1982, p. 8).

In short, the telephone has irrevocably shaped the world in which we live. Research included in Pool's (1977) landmark volumn indicates that the telephone has been credited with (or blamed for) the demise of the personal letter, the deterioration of urban neighborhoods, the entry of respectable young women into the working world, the maintenance of family ties despite geographic dispersion, the skyscraper, and suburbia.

The telephone will almost certainly continue to shape our future. Many of the new technologies (e.g., voice mail) now being developed and refined are--in terms of the human user's communication behavior--adaptations of basic telephonic communication. So projections of future trends

consistently predict a continuing role for the telephone (Lewin, 1981; Pelton, 1981; Williams, 1982). And, as long as the telephone remains an important communication channel, individuals who experience telephone apprehension may be hampered both personally and professionally.

Communication Apprehension

Scholars have investigated several types of communication apprehension. Three types of instruments have been used to detect communication bound anxiety: observer ratings, mechanical measurements of physiological changes (e.g., polygraph and voice stress analyzer), and self-report scales (Clevenger, 1959). McCroskey (1970) cites three advantages to self-report scales: First, scales are easy and inexpensive to administer. Second, they can tap anxiety responses across a variety of communication contexts at one time. Third, Likert-type scales, when properly developed, normally are highly reliable. Critics may argue that self-report scales require a high level of objectivity on the part of the respondent, and that for a respondent to be able to report his or her feelings, he or she must both be aware of feelings, and then report them honestly. In response, Wheeless (1975) argues that objectivity is not essential, and that society does not discourage the disclosure of communication apprehension. In any event, self-report instruments using Likert-type scales have clearly become the most popular technique and a number of tests have been developed, including tests for speech apprehension (McCroskey,

1970), communication apprehension (Scott, McCroskey & Shehan, 1978), listening apprehension (Wheeless, 1975), and unwillingness to communicate (Burgoon, 1976). For the most part these tests ignore the telephone as a potential communication channel--minor exceptions are Harris (1980, p. 50, revised item #1) and Wheeless (1975, p. 265, Table 1, item #1).

Research suggests that various forms of communication apprehension are fairly common, occurring in perhaps as much as one-third the population (Lohr & McManus, 1975; McCroskey, 1972, 1977; McCroskey, Daly & Sorenson, 1976; McCroskey & Richmond, 1979). Research also indicates that apprehension may be related to a number of behaviors and indices including career success (McCroskey & Richmond, 1979), occupational choice (Daly & McCroskey, 1975), employee satisfaction (Scott, McCroskey & Shehan, 1978), communication in small groups (Burgoon & Burgoon, 1974), classroom behavior (Crocker, Klopf & Cambra, 1978; Scott & Wheeless, 1977), dating behavior (Parks, Dindia, Adams, Berlin & Larson, 1980), and a variety of personality traits (Beatty & Payne, 1981; McCroskey, 1977).

Only a single study is known to have attempted an investigation of telephone apprehension. Lewis and Reinsch (1982) collected data from 58 business communication students, 52 high school teachers of business communication, and 16 college professors. Each subject was tested for speech apprehension, communication apprehension, writing apprehension, and telephone apprehension. Telephone apprehension was measured with a set of three Likert-type scales. Lewis &

Reinsch concluded that telephone apprehension was significantly correlated with communication apprehension ($r = .383$, $p = .002$) but not with speech apprehension ($r = .141$) or writing apprehension ($r = -.052$). They also called for development of better tests for telephone apprehension, noting that the internal reliability of their three-item test was only 0.692.

Another study which indirectly sheds some light on the topic of telephone apprehension is Wurtzel & Turner's survey in New York City. As part of a larger study each of 150 individuals was asked to select one of four statements as most nearly representing his or her attitude toward the telephone. The four statements and the percentages of respondents who picked each statement were as follows: "Enjoy using the telephone and use it at every opportunity," 33.2%; "Use the telephone whenever I have to," 51.5%; "Dislike using the phone but use it when necessary," 11.6%; and "Avoid using the phone as much as possible," 3.7%. If one is willing to assume that this item measures telephone apprehension then these figures suggest that severe telephone apprehension may occur in less than four percent of the population, but that some level of apprehension may occur in fifteen percent. These estimates may be either too high (since factors other than apprehension might affect responses to this item) or too low (since the survey was conducted by telephone and may have missed high apprehensives who do not have a phone or who have a phone but insist that someone

else answer it). The data collected by Lewis and Reinsch support the assumption that the item measures telephone apprehension: They found that responses to the Wurtzel-Turner item were strongly related to scores of their three-item test of telephone apprehension.

Communication apprehension is, therefore a significant concept with important implications. Telephone apprehension is probably similarly important, having implications for dating behavior, family communication, occupational preference, and other variables. But investigation of these hypothesized relationships will depend on the development of a reliable method of measuring telephone apprehension. The development of such a test is the goal of this project.

Procedures

Initially a set of 92 Likert-type items was prepared. These items were adapted from previous scales (Beatty, Kruger & Springhorn, 1978; Burgoon, 1976; Gilkinson, 1942; Lewis & Reinsch, 1982; McCroskey, 1970; Mortensen, Lustig & Arntson, 1977; Taylor, 1953; Watson & Friend, 1960; Wheeless, 1975), suggested by colleagues, and generated by the authors. Each item could be answered on a five point scale with one indicating strong agreement, and five indicating strong disagreement. This instrument was then administered to 81 undergraduates in a basic speech class at a large public university in the south central United States. The items were evaluated for reliability (Hull & Nie, 1981, pp. 248-267) and 62 items were eliminated.

The remaining 30 items were refined in wording and, in some cases, reversed in polarity. The resulting test was administered to 371 students enrolled in a basic speech communication class at the same large, public university. Approximately half the students were male and half female. Complete data were received from 333 students. Responses were analyzed for reliability (Hull & Nie, 1981) and factor analyzed (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975).

Results

Numerical values of responses to some items were reversed so that in every case larger numbers indicated higher apprehension, and a composite score was calculated for each individual.

Correlations between the composite and individual scales were examined and the items with the lowest correlations were systematically discarded until only 20 items remained. Correlations between the 20 items and the composite score are reported in Table 1. Overall reliability was very high (alpha = .940).

Table 1 about here

All three items adapted from Lewis and Reinsch (1982) were included in the final 20-item test. Lewis and Reinsch reported that responses on those items were strongly related to responses on the single multiple-choice, behavioral item selected from Wurtzel and Turner's (1977) survey. The

inclusion of the three items from Lewis and Reinsch provides, therefore, some limited and indirect evidence for concurrent validity of the 20-item test.

Composite scores had a potential range of 20 to 100. Actual scores ranged from 20 to 83 with a mean of 40.862 (mode = 42, median = 40) and a standard deviation of 11.636; skewness was 0.884, kurtosis was 1.304. Forty-one (12.31%) of the students scored more than one standard deviation unit above the mean. Twenty-five (7.51%) of the students scored above 60, the midpoint of potential scores. A frequency polygon of grouped data (i = 3) is provided in Figure 1.

Figure 1 about here

To further verify the unidimensional nature of the scale we performed factor analysis. The unrotated factor loadings strongly indicated the presence of a single major factor: Every scale had its primary loading on the first factor and every primary loading was in excess of 0.56.

These results indicate that the 20 items listed in Table 1 constitute a reliable and unidimensional scale which can be used to assess telephone apprehension. We hope this instrument will facilitate telephone apprehension research.

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TABLE 1

TELEPHONE APPREHENSION: ITEM-TOTAL CORRELATIONS

Item	Corrected Item-Total Correlation
1. I look forward to telephone conversations.	.652
2. I feel it is difficult to converse over the phone.*	.627
3. I avoid speaking on the telephone whenever possible.*	.602
4. I find speaking on the telephone pleasant.	.710
5. I take pride in my speaking ability over the phone.	.546
6. It is easy for me to express myself on the telephone.	.547
7. I thoroughly enjoy speaking on the telephone.	.661
8. I feel rushed and pushed when I use the phone.*	.675
9. When I have to talk on the phone I grow nervous and uncomfortable.*	.618
10. I hurry to finish the conversation when talking on the telephone.*	.568
11. I feel misunderstood when I use the phone.*	.677
12. I have problems expressing myself over the telephone.*	.575
13. I do not like to talk on the phone.*	.716
14. I feel inhibited using the phone.*	.563
15. I feel relaxed and comfortable when speaking on the telephone.	.725
16. I dread speaking on the phone.*	.713
17. I feel calm and comfortable using the telephone.	.714
18. I do not feel comfortable using the telephone.*	.745
19. I have feelings of frustration after most phone calls.*	.661
20. I avoid using the phone.*	.587

*Polarity reversed.

FIGURE 1

GROUPED TELEPHONE APPREHENSION DATA